

THE BOND QUESTION.

MR. EDITOR,—In THE BUILDER of the 23rd ult. are some observations on "hoop-iron bond," and a recommendation that it "should be strained tightly the whole length of each wall in one piece, if possible, and secured at the end by turning it up at right angles, and lapping it over the upper courses."

Now, Sir, although it is known well enough that, with the exception of water, all bodies are expanded by heat, I beg to remind your readers that bodies of a *different* nature are not *equally* expanded by an *equal* increase of the degree of it. This is strikingly demonstrated by Wedgwood's pyrometer,—an instrument formed of clay for ascertaining high temperatures by measuring in its gauge the expansion of metallic rods previously submitted to the temperature required to be known; and also by the fact which every architectural draughtsman must have observed, of the different expansion, in hot and damp weather, between his wooden or ivory rules, and his drawing paper.

Since, therefore, brickwork cannot be lengthened by heat or contracted by cold, precisely in the same degree as iron is, it seems to me that unless dry brickwork be compressible,—or unless (which I much doubt) iron be elastic, *i.e.*, capable of itself resuming its pristine dimensions after any casual extending force may have been removed from it,—it seems to me, I say, that all courses of brickwork, however tightly bonded with iron in the first instance, will only remain effectually so when the atmosphere possesses that precise temperature which it had when the brickwork was originally bound; and that in extraordinary hot weather the restraining power of the iron for keeping the brickwork in its intended situation will cease to act, and the iron thus become detached and useless,—iron being much more expandable than brickwork.

This, then, is a very important question that should be forthwith experimentally answered, and which might easily be done by any of your practical readers, when they may have occasion next to build a common garden wall, or some such like unroofed and untied structure.

I am, Sir, &c., W. BROMET.
February 3, 1847.

P.S. Since writing the above I have seen, in your number of the 6th instant, a letter, in which "elasticity of iron" is spoken of as a fact proved by "great experience." But this is rather flexibility, and not *true* elasticity, being merely such mechanical and permanent extension or stretching of its particles, as a blacksmith gives to iron by his hammer, and not the elasticity caused by a "*vis insita*," like that possessed by India-rubber. The iron, however, of whatever size, would still retain its susceptibility to change by the influence of heat and cold, and, therefore, would be liable to the objections of your last correspondent on this subject, *unless such change* (but which I hold to be impossible) were "by some means counteracted;" and would, moreover, as I have before said, cease to bind, because it would loosen itself not only at its "ends," but throughout its "whole length."

P.P.S. Feb. 12.—Some gentlemen may suppose that, when iron is enveloped by thick walls, it would be protected from the temperature of the circumambient air. But this I doubt; because Heat, although conducted at a comparatively slow rate by brick or stonework, is an all-pervading agent, and exists often in a latent state, undiscoverable either by our sense of touch, or by thermometers.

It has been inferred that, if iron-hoop bond be bedded in cement, it cannot move. But, supposing this to be a just inference (although I believe that in no possible circumstance is the natural expansion of iron by heat controllable), I beg to ask whether any such power as could prevent this expansion would not, *à fortiori*, act as a sufficient binder, and so render useless any iron applied for that purpose?

If iron be ever employed for binding stonework, it should, I think, be employed as at Dover, where, in the construction of the new sea-wall, a stout iron chain has been laid, but without straining it, over one of the central grouted courses of the large unwrought boulder-stones with which the wall is made.

What, however, will be the effect of this chain bond, we must wait for old Neptune, some stormy day, to discover. W. B.

ART IN MONTREAL AND QUEBEC.

A CORRESPONDENT writes us that art is beginning to bud in these provinces. The booksellers' shop windows shew some of the best London and Paris prints exposed for sale. On the 6th of January an exhibition of paintings by artists living in Montreal was opened, and though they were mostly copies from modern artists in Europe, and some very bad copies too, the exhibition, as a whole, was better than might have been expected. Numbers of very bad imitations of our favourite artists, and copies of their works, are brought in from the States, and sold at high prices. The London Art-Union has honorary secretaries in Montreal, Quebec, Toronto, and Kingston, who have sent a fair list of subscribers.

CONSTRUCTION OF BATHS.

SIR,—The Public Baths and Washhouses Act has been adopted, it is said, by the metropolitan parishes of St. Martin-in-the-Fields, St. Mary-le-bone, St. James, Piccadilly, and St. Margaret and St. John, Westminster, and by the boroughs of Leeds, Birmingham, Stockport, Bath, Newcastle-on-Tyne, Plymouth, Bristol, Worcester, &c. These make but a beginning. Still they create a new demand for an article of manufacture to which sufficient attention has not hitherto been paid. I allude to the baths with which they are to be fitted up.

There are two most important requisites for those baths. 1. Durability. 2. Cleanliness. There is a third, though of less importance. 3. Beauty.

Allow me to suggest, in your columns, that attention should be paid to the manufacture of baths, and to give a few hints.

1. Durability. Where baths are to be kept in constant use, it is of great importance that they should not be liable to oxidation or corrosion; that they should not be brittle; and that when they are formed of several pieces, their joints should not be liable to "weep." Zinc, galvanized iron, copper, lead, marble, varnished wood, and slate, among others, are deficient in durability; for as a part of durability, the preservation of a polished surface is to be considered.

2. Cleanliness. Where a bath is to be used frequently in the same day, it is essential that it should be capable of being easily and rapidly cleaned. A bath which can be cleaned by merely passing a mop over its surface and dashing two or three pails of water on it, is infinitely better adapted for a public establishment than one which needs the friction of a scrubbing brush or sand-paper to keep its surface bright. All metal baths, at least, will require considerable scrubbing to make them bright or attractively clean.

3. Beauty. A dull-coloured bath will give a dull hue to the water it contains, and will render it less easy to detect any want of clearness in the water itself. Baths of zinc, lead, and slate are particularly open to this objection.

I understand that the Parent Baths and Washhouses' Committee are having some cast-iron baths enamelled for their model establishment at Goulstone-square, Whitechapel; and that they are having some of their baths of white porcelain tiles. The chief objection to tiles seems to be, that the joints between them must present a rough surface, which will "catch the dirt." If the enamelled baths can be made at a reasonable cost, they may probably answer well, as combining the three points to which I have alluded. But, Sir, however earnest a committee may be in their endeavours to obtain a thoroughly good article, there must be a far larger amount of inventive talent among our manufacturers than any committee can possess; and I shall be glad if my hints may be the means of inducing some of your readers to turn their attention to a subject which involves the two points, essential to the success of commercial enterprise, public good, and private emolument.

Your subscriber, N. R.
London, February 13, 1847.

WATER.—According to the *Gloucestershire Chronicle*, the Gloucester Water Company have determined to give the city the benefit of a constant instead of intermittent supply of water. We hope to find this example followed.

THE GAS MOVEMENT.

RAYS of light occasionally interfere with each other's progress towards their respective destinations, and the result is a diminution of light for the time being instead of an increase. The mutual interference of old and new gas companies, in their Parliamentary and other struggles for supremacy, is here and there producing,—negatively, at least, by prevention of intended increase and improvement,—just such a temporary "darkness from excess of light." So is it, for instance, at the present moment, in the city of Worcester, where obstacles in the way of an intended increase of light have arisen in consequence of Parliamentary proceedings between the old and new dispensers of the light. The new have promised to reduce the charges of the old by no less than 20 per cent., although the latter do not exceed 6s. per 1,000 cubic feet of gas. And the old, in order not to be outdone by the new, now offer to light the public lamps at as low a charge as that of the new. The public are thus, at all events, likely, in the long run, to benefit, as usual, by the "fair competition" of the caterers for its staple requirements; and the only limit to one's reasonable satisfaction with a consummation so desirable would be the every way unprofitable conversion of such fair and profitable emulation into "ruinous competition." But we are probably a long way off such a limit to the benefits to be derived from cheap and good gas light.

The variation of the price of gas in various localities is very great. This probably in part arises from the variation in the expense of coals; but that is by no means sufficient in many cases to account for the differences. At Salisbury the price is 10s. per 1,000 cubic feet; and at Romsey it is even 12s. 6d., while at Southampton it is only 6s. 6d.; and, at Liverpool, as already noted, 4s. 6d., with the immediate prospect of a reduction to 3s. 4d.; nay, from the extraordinary evidence of Mr. Cox, a *practical gas producer*, on his examination, lately, before the Commissioners of Inquiry there, as to the cheapness with which the article can be supplied in connection with the sale of the coke, it appears that companies might sell gas with a profit at 2s. 8d. per 1,000 cubic feet; and moreover that in one manufactory at Bristol it actually costs less than nothing! It is quite clear, in short, that dust has been already thrown into the eyes of the public far too long for patient endurance.—Witness the fruits of competition at North Shields.—"In 1844," says the *Gateshead Observer*, "the improvement commission, thinking 52s. per street lamp too much, offered 45s. The terms were rejected:—'45s. could not possibly pay.' Both parties were stiff, and the town went one whole winter unlighted. A new company was formed, and contracted to supply the lamps with gas of the best quality at 17s. per annum. In the first year the shareholders divided 3 per cent.; in the second, 5 per cent.; and in the third it continues to prosper. The supply from both companies is abundant and good. On the other side of the Tyne—at South Shields—there being only one company, 5s. 9d. is charged for what only costs 3s. 9d. in North Shields."—The Sunderland Corporation Gas Works were scarcely finished, the other day, when all the leading plumbers in the town were almost constantly engaged fitting up new meters and new service pipes, and the quality of the article is so superior to that of the old company, that nearly all who are not personally interested in upholding the latter are said to be applying for the new article, which is found at length to obviate the chief objection hitherto to the introduction of gas into private dwellings,—a circumstance which will in all probability lead to a very great increase of general consumption there. In the benevolent aspiration of the *Gateshead Observer* we most cordially concur: "May the successful example of Sunderland stimulate other towns to secure for themselves the twofold advantage of cheap and pure gas." The new works at Sunderland have, it is said, a handsome exterior. The front is of freestone, 246 feet long; breadth of whole 117 feet. The retort-house has a cast-iron roof, made by Messrs. Burlinson, of Sunderland, and contains sixteen ovens, with five retorts each, made of fire clay for expeditious production and saving of fuel, as well as comfort to the workmen.